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ABSTRACT

The question of an interaction over time between ability grouping and personality variables was the focus of the present study which examined pertinent data from 260 female high school students. Two standardized personality instruments, in addition to several scales designed by the E's, were administered to students of the upper and lower ability tracks in a Catholic high school, grades 9 and 12. Ss in the lower track were found to have a lower need for achievement, a higher need to avoid failure, and a higher average score of test anxiety than Ss in the upper track. The effects of ability grouping did interact with grade level for a correlate of personality, level of aspiration. Relative to Ss in the upper track, lower track Ss experienced a reduction in level of aspiration over time. Both future directions of associated research and educational practices were discussed within the context of the present findings. (Author)

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The Limitations of the Interaction Hypothesis in Regard to Ability Grouping

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The practice of grouping students by abil as been employed in American education in one form or another for over a hundred years. During this time several reviews of the effectiveness of this technique have appeared, most of which have reported equivocal results (4; 6; 8; 7; 12). As Thelen points out, when academic achievement is used as the dependent variable homogeneous and hetrogeneous grouping produce almost identical results (13:29). Since so little concrete evidence can be found to either support or refute differential grouping, the argument has been raised that the primary effect of grouping by ability is to be found, not in regard to cognitive variables, but in the affective domain. The data supporting this idea, however, seem to be even scantier and more equivocal than that in the cognitive area (13; 8). Since ability grouping continues to be a widely used practice it would seem mandatory to clarify some of the issues that relate to the long-term effects of grouping on personality characteristics. Our intention in writing this paper is to present some data that attempt to do this.

One of the arguments in support of ability grouping rests on the idea that a student of lower ability who is forced to repeatedly compete against brighter students will develop a perception of himself as a failure. Over time this will produce an increasingly poorer self-concept and a lowering of confidence. If, on the other hand, this student is placed in a group whose members are equal to him in ability, he will not experience repeated failure and will not undergo a

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CG 006 704

deterioration in motivation or positive personality characteristics. A counter argument to this is that a student who is placed in a slower track will come in time to inculcate this track's label and will associate himself with this reference group, suffering the exact decrement in self-concept and motivation that homogeneous grouping had intended to avoid. While these two positions are markedly different in what they prescribe, it can be seen that both of them predict an interaction over time between personality variables and ability.

It seems clear from a review of the literature that little in the way of published data can be marshalled in support of this interaction hypothesis. Indeed, Wrightstone comments that such studies, when they do appear, are so subjective that no valid conclusions can be drawn (13:510). While this statement is perhaps too strong, especially in view of studies such as the one reported by Goldberg et al. who do find such an interaction in support of homogeneous grouping (7), it is still the case that little substantial data exists. Perhaps an even more telling point is made by Thelen (12) who comments that whenever the effects of ability grouping are investigated there will almost always be a confounding of socio-economic status and/or race. He points out that in most cases a lower ability track will also be a track made up of students from lower social classes and minority races. In such a situation, it is extremely difficult to differentiate the labelling effect of being in a lower track from the effect of being a minority race member.

In this paper we have attempted to overcome the problems usually found in investigations of ability grouping by controlling for two major classes of variables. First, we have attempted to avoid subjectivity in measurement by using standardized personality tests of three widely researched personality characteristics--the need for achievement, the need to avoid failure, and anxiety. Both the need for achievement and the need to avoid failure are personality

variables that have been associated with such educationally relevant activities as persistence, goal setting and competetion with standards of excellence. A person motivated by the need for achievement is realistic in his goal setting, tries hard in academic situations, and is willing t dergo the type of delay of gratification that is required to successfully complete college. A person with a need to avoid failure is characterized as directly opposite to the person described above. A person who is anxious (as measured in this study) is inhibited in such activities as test taking and academic competetion and performs less well than his ability would predict. If the interaction hypothesis is correct, it is just such variables as these that should change as a function of ability grouping. In addition to these three standardized tests, three measures of level of aspiration were administered. Level of aspiration was chosen because it is a variable that would seem to be affected by personality characteristics in general (and those utilized in this study in particular) and because it is also a variable that has extensive educational implications.

The second improvement over previous research is that the sample was selected in such a way that socio-economic status, race and sex were eliminated as factors as much as possible. To achieve this end an all-girl, Catholic high school in a suburb of a large metropolitan area was selected for the subject pool. Since this school is almost all white and draws its students from an area which is middle to lower-middle class, the variables that might confound the effects of grouping have been significantly restricted. With these two characteristics of the study in mind, there are two primary questions that are being asked: 1) Are there personality characteristics that differentiate students in various ability groups?; 2) Is there an effect over time of ability grouping on affective variables?

Method

Subjects

The Ss were selected from a surburban Catholic girls' high school which places its students in one of four tracks according to ability. This index of ability is a composite of intelligence, standardized achievement test performance, and grade point average. For this study all of the track one and track four freshmen and seniors were tested (freshmen track one, n = 101; freshmen track four, n = 88; seniors track one, n = 42; seniors track four, n = 30).

Materials

Two personality instruments were employed to assess anxiety, need to avoid failure and need for achievement. Anxiety was measured by the Test Anxiety Questionnaria (TAQ) devised by Mandler and Sarason (9), which assesses anxiety in several testing situations. Validity and reliability of this instrument have been adequately established, and, along with applications, are summarized in such sources as Atkinson (1) Atkinson and Feather (3), and Birney, Burdick and Teevan (5).

The need to avoid failure and the need for achievement were measured by the Mehrabian scale (10;11). While this is a relatively new assessment technique (see Atkinson (2), for a summary of assessment techniques in this area), Mehrabian has offered a relatively simple and direct measurement of these two needs. The female version, consisting of 26 items, requires the S to register agreement or disagreement to a series of statements, the contents of which were derived from achievement motivation theory. The test, as utilized in the present study, produced two scores: a total negative score, representing the need to avoid failure; and a resultant, representing the need for achievement.

In addition to these two standardized personality measures, three measures

of level of aspiration were obtained: educational, occupational, and cognitive aspiration, all employing an interval scale format. These formats were as follows: a) educational aspiration, assessed by requiring the S to indicate to what type of college she thought a female high school student should apply, ranging from an exclusive private college (high level of aspiration) to a business college (low level of aspiration).; b) occupational aspiration, which asked the S what type of occupation she thought a girl graduating from high school should try and reach, ranging from business executive to housewife; and, c) cognitive aspiration which asked the S what level of difficulty in a cognitive task a student in her class would try to accomplish, ranging from very difficult ("only 10% can do it") to very easy ("90% can do it"). All three scales ranged from one to five.

Also obtained for each student was a measure of general intellectual ability, her most current score on the SRA Primary Mental Abilities Test.

Results

To ascertain whether the personality variables in question differentiated track one from track four, and whether there was an effect of tracking over time, three 2 x 2 analyses of variance (track x grade) were computed. These analyses indicated main effects of track for need to avoid failure ($F = 5.76$, df. = 1, 211, $p < .05$), need for achievement ($F = 4.09$, df. = 1,211, $p < .05$), and anxiety ($F = 4.45$, df. = 1,211, $p < .05$). None of the track x grade interactions approached or reached statistical significance. In words, the three personality variables studied did significantly differentiate the tracks: track four Ss had a higher need to avoid failure, a lower need for achievement, and were more anxious than track one Ss. There was, however, no indication that these differences changed (either to increase or decrease) through time.

Similar statistical analysis revealed that the Ss in the two tracks also

differed significantly on the three indices of level of aspiration. Thus, there wer main effects of track for occupational level of aspiration ($F = 30.98$, df. = 1,218, $p < .01$), educational level of aspiration ($F = 4.23$, df. = 1,218, $p < .05$), and cognitive level of aspiration ($F = 5.51$, df. = 1,218, $p < .05$). For all three indices track one Ss had a higher level of aspiration than track four Ss. In addition, for the cognitive level of aspiration index, there was a significant track x grade interaction ($F = 6.05$, df. = 1,218, $p < .05$). The corresponding interaction for occupational level of aspiration approached statistical significance. These interactions indicate that the effect of tracking over time results in a deterioration in level of aspiration for track four Ss. For the index of cognitive aspiration, there is a corresponding increase in level of aspiration for track one Ss. Figure 1 graphically depicts these relationships.

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Additional insight can be gained into the relationships between the variables examined in this study by an analysis of the correlations among these variables. These correlations are presented in Table 1.

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An analysis of these correlations indicates that the three level of aspiration measures are not only independent of the personality measures, but are relatively independent of each other. The same can be said of the three personality variables. (The obvious exception is the high correlation between the measure of the need for achievement and the need to avoid failure. This is primarily due to the method of scoring the Mehrabian scale from which the two scores were derived.) This leads to the conclusion that different behaviors have been measured by the

various scales utilized in this study.

Before presenting the implications of the data presented above, the limitations of these data should be mentioned. Our first purpose in writing this paper was to ascertain if personality variables could differentiate between groups that had been created primarily on the basis of ability. Our data show that the three personality variables that were studied do significantly differentiate the extreme ability groups tested. Beyond this, there are several questions that one might like to ask that cannot be directly answered from the data collected. In general, these are the deficiencies inherent in any essentially descriptive study. It is in testing the second question, however, that a stronger warning must be made. Our major purpose in writing this paper was to attempt to test the interaction hypothesis that was mentioned earlier. To adequately answer this question it would be necessary to perform a longitudinal study. It must be kept in mind in analyzing the meaning of the data reported here that these data result from a cross-sectional study. Keeping these points in mind, there are still several implications suggested by the data.

Perhaps the single most important item for discussion is the apparent inconsistency between the pattern of results for the personality variables and for the measures of level of aspiration. While all of these measures significantly differentiated the tracks, it is only for the level of aspiration measures that there is the type of interaction that had been suggested by previous research and theory. This finding would seem to suggest that the issue of the effect of tracking on personality has been discussed at the wrong level. After all, it is assumed by most personality theories that a personality is formed early in life and remains constant after this period. If this is true, one should not expect that a manipulation such as tracking would produce a change in personality per se. Instead, one might assume that a change, should it occur, will be produced in the manifestations of personality, that is, in such things as confidence, self perception,

and aspirations.

Our data suggest that tracking does have an effect on a students's future aspirations. A track four student will, with time, lower her occupational aspirations and her perception of personal co[illegible]ve capacity. Our data, of course, cannot say if this is a trend toward realism or trend toward pessimisn. The fact that such a trend was discovered at least leads one to question the notion that homogeneous ability grouping is necessarily a good technique for all students.

Beyond this there are educational implications that would seem to follow from these data. The fact that the tracks can be differentiated on the three personality variables studied as well as I.Q. (even though of these four only I.Q. was utilized in forming the tracks) provides additional information that could be used in prescribing educational techniques. It seems warranted to say that educational practices that are geared exclusively to track one or track four students should take affective differences into account as well as cognitive differences. A track four student is not only a student of lower cognitive ability, she is also more than likely a student who has a low need for achievement and a high need to avoid failure. Such basic needs should not be ignored in developing educational practices. Our data indicate that the effect of grouping for the lower track could be viewed as cumulative and negative. Whether this will be replicated in further research is perhaps less important than the fact that such research must be done.

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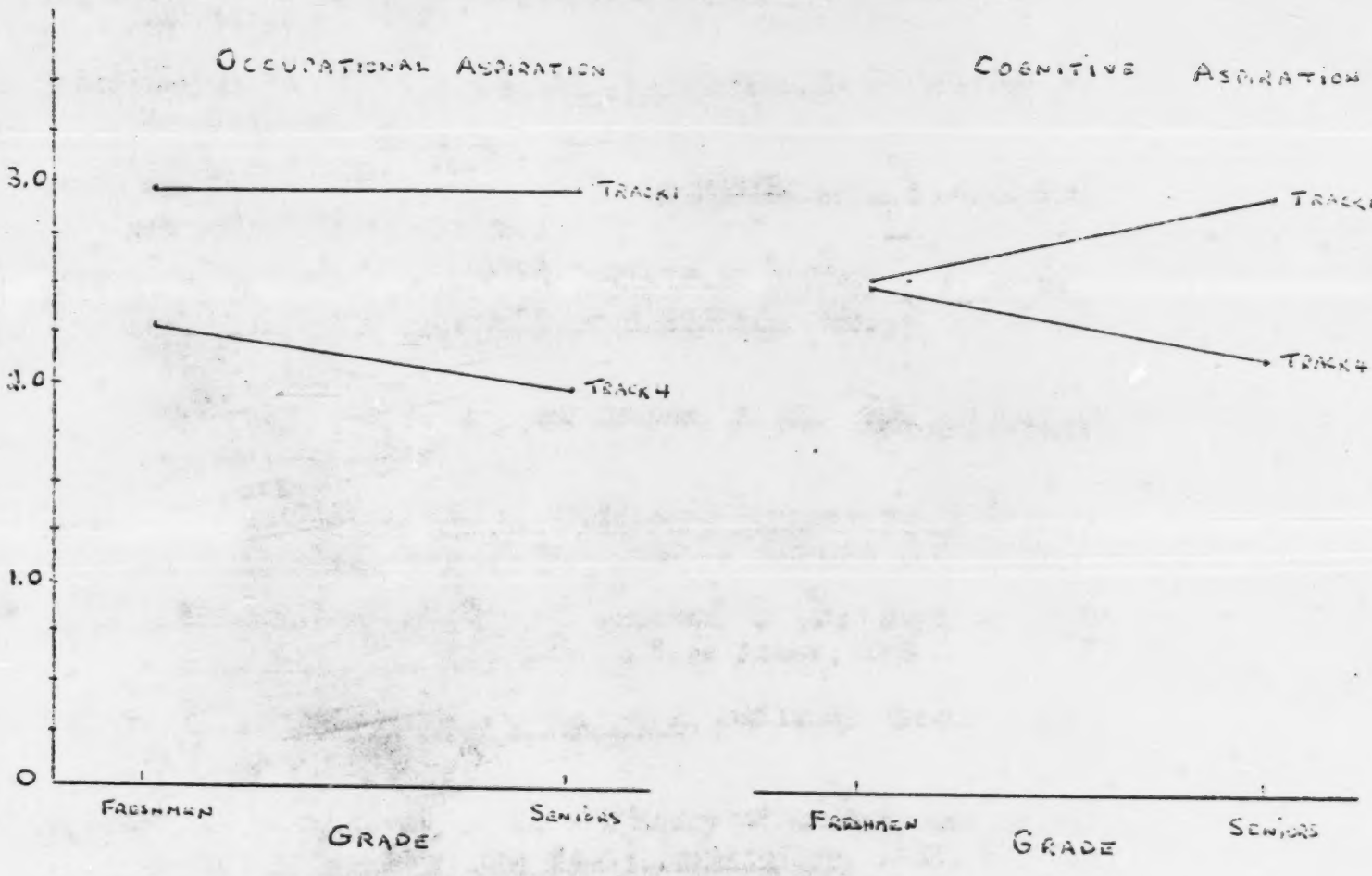

Figure 1. Interactions of track by grade for occupational and cognitive aspirations.

Table 1

Correlations between levels of aspiration (L.O.A.), personality variables and I.Q.

	Occupational L.O.A.	Educational L.O.A.	Cognitive L.O.A.	Need To Avoid Failure	Need For Achievement	Anxiety
I.Q.	.32*	.15	.08	-.17	.18	-.36*
Occupational L.O.A.		.11	.10	-.13	.16	-.11
Educational L.O.A.			.51*	-.06	.19	-.08
Cognitive L.O.A.				-.07	.19*	.03
Need To Avoid Failure					-.74*	.15
Need For Achievement						-.11

Note: N = 213.
$p < .01$, two tailed test.